

Scientists at St. Helens Study Natural Systems Recovery

Detailed measurements of Spirit Lake, in the Mount St. Helens "red zone," indicate that deep water oxygen depletion still is occurring but at a decreasing rate, according to Doug Larson, limnologist with the U.S. Army Corps of Engineers.

Scientists from the U.S. Forest Service, the National Park Service, and various Universities in the Pacific Northwest have been accompanying the bi-weekly monitoring teams on their helicopter flights into the Red Zone — taking advantage of the research opportunities offered by the May 1980 cataclysm.

On June 6, for instance, Bacteriologist Mike Glass of the Washington Department of Social and Health Services, found large numbers of tadpoles in various stages of development swimming in pools along a stream just below Spirit Lake.

Larson and Steve Sumioka of the U.S.G.S., in a day of monitoring out on the lake, observed numerous flies, beetles, butterflies, and other evidences of the strongly returning life in and around the lake.

The June 6 readings showed substantial heating of the upper 20 feet of water — 11.8 degrees C. on June 6 at the surface compared to 5.3 degrees on April 25. (Temperature at the 132-foot level stayed approximately the same, at 4.2 to 4.4 degrees C.). Dissolved oxygen readings for top and bottom of the lake on June 6 were 8.8 mg per litre at the surface and 4.9 at 125 feet compared to 8.1 at 46 feet and 6.7 at the bottom on April 25.

The deep water oxygen depletion is a result of the loads of organic material in suspension and in the bottom sediments, which are being consumed by bacteria — using up the oxygen in the process of assimilation. At the same time, thermal stratification caused by the heating of the upper layer of water is preventing full circulation and reoxygenation of the lake

waters.

"Over the next two or three years, we should see oxygen depletion become less and less severe," Larson said.

Regular measurements are being taken at Spirit Lake for temperature, dissolved oxygen, pH, conductivity, chlorophyll a, phytoplankton, Secchi disk readings, photometer readings, hydrogen sulphide, total organic carbon, alkalinity, and various metals such as lead, zinc, copper, and mercury.

Larson, who did his doctoral thesis on the limnology of Crater Lake, will be spending his 10th year on the lake this year as principal limnologist for the NPS. He will be establishing a limnological water quality monitoring program and coordinating research by other investigators.

In collaboration with Dr. Cliff Dahm of Oregon State University, Larson will focus his specific research activities this summer on the effects of ultra violet radiation on lake phytoplankton populations.



Doug Larson, principal limnologist for Crater Lake this summer, directs the transfer of monitoring gear from station wagons to helicopter as scientists prepare to enter St. Helens' Red Zone.



Bleak landscape is offered by the north side of Mount St. Helens, its slowly building crater cone looming over the devastated remains of Spirit Lake.



Steve Sumioka, USGS, balances his combination temperature and dissolved oxygen probe and records information from the surface to the 132-foot deep bottom of Spirit Lake.